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CALLOSITIES ON HORSES' LEGS.

TO THE EDITOR OF SCIENCE: Your inquirer concerning the callosities on horses' legs might gain an indirect suggestion from Ernest Seton Thompson's 'Wild Animals I Have Known' or—still more probably—from the same author's recent articles in the *Century Magazine* on the National Zoological Park. The suggestion that these callosities are vestigial organs for the secretion of specific perfumes gains some indirect but interesting support from the use made of their material by Rarey and other professional 'horse-tamers.'

W J MCGEE.

NOTES ON INORGANIC CHEMISTRY.

IN a study of the radiation of uranium, Becquerel finds that these rays are deviated in a magnetic field. When the uranium compounds are treated with barium salts and the barium then precipitated as a sulfate, the radio-activity of the uranium is decreased, but Becquerel has not been able in this way to obtain a uranium salt which does not show some activity.

A SOMEWHAT similar series of experiments is described by Béla von Lengyel in the *Berichte*. The barium sulfate obtained from the uranium mixture was found to be strongly radio-active, as well as the barium carbonate and chlorid derived from this sulfate. The author considers this synthesis of radio-active barium renders the existence of radium and polonium as elements exceedingly doubtful. This reminds one of the views of Le Bon that radium and polonium are merely allotropic states of barium and bismuth, corresponding somewhat to the inactive and the phosphorescent calcium sulfids.

ACCOUNTS have been published from time to time in the *Comptes Rendus* by Paul Sabatier and J. B. Senderens on the addition of hydrogen to acetylene under the influence of reduced metals in a finely divided condition. The action of copper, iron and cobalt have been most recently described, the union taking place below 200°. With copper, ethane, ethylene, and other hydrocarbons are formed, and if hydrogen is in excess no acetylene is unacted upon. With iron in addition to ethane and ethylene, benzene and higher unsaturated hydrocarbons are

produced. Cobalt is found to give a much larger yield of ethane than nickel.

THE direct preparation of a number of binary compounds of aluminum is described by Henri Fonzes-Diacon in the *Comptes Rendus*. The sulfid, selenid, phosphid, arsenid, and stibid are all formed by the ignition of a mixture of fine aluminum powder with the element in question. In the case of sulfur and selenium, a little burning magnesium is necessary to ignite the mixture; with antimony, sodium peroxide serves the same purpose. When these compounds are treated with water, the hydrogen compound is evolved in a very pure state. In the case of phosphid the yield of the non-inflammable gas PH_3 is practically theoretical, and the same is true of arsin. The yield of stibin is less good.

A RECENT *Bulletin* of the College of Agriculture of Tokyo, contains a paper by Dr. U. Suzuki on the possible replacement of calcium in plants by strontium and barium. From an abstract in *Nature* it appears that both strontium and barium salts are poisonous to plants, though the addition of lime salts lessens the poisonous action to some extent. This is apparently very different from the action on higher animals, where, though barium is strongly toxic, strontium has little if any toxic action.

FROM *Nature* we note also a short article by C. E. Stromeyer from the *Memoirs* of the Manchester Literary and Philosophical Society, on the Formation of Minerals in Granite. He concludes that the temperature of granite formation need not be limited, nor need the interior of the earth be assumed as solid. The mineral composition of granites depends not only upon temperature and rate of cooling but also upon pressure. "Where the solid rock resting on the molten material is of low specific gravity and a bad conductor of heat the depth at which granite rock would commence to solidify would not be great, and most probably the quartz would crystallize first, forming, say, quartz-porphry." In somewhat opposite conditions, at greater depths and pressure the quartz would remain fluid longer, forming feldspar-porphry. Every intermediate condition is also conceivable.